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November 7, 2005  
JAFP-05-0172

T.A. Sullivan  
Site Vice President - JAF

United States Nuclear Regulatory Commission  
Attn: Document Control Desk  
Mail Station P1-137  
Washington, D.C. 20555

Subject: **Docket No. 50-333**  
**LICENSEE EVENT REPORT: LER-05-005 (CR-JAF-2005-03818)**

**Automatic Reactor Scram on Low Reactor Vessel Water Level  
During Reactor Feed Pump Control Reset**

Dear Sir:

This report is submitted in accordance with 10CFR50.73(a)(2)(iv)(A) based on the automatic actuation of systems listed in 10CFR50.73(a)(2)(iv)(B), including the Reactor Protection System, High Pressure Coolant Injection system, Reactor Core Isolation Cooling system and general containment isolation signals affecting more than one system (Group 2 isolation).

There are no commitments contained in this report.

Questions concerning this report may be addressed to Mr. Jim Costedio at (315) 349-6358.

Very truly yours,

A handwritten signature in black ink, appearing to read "T. A. Sullivan".

T. A. Sullivan

TAS:DD:dd  
Enclosure

cc: USNRC, Region 1  
USNRC, Project Directorate  
USNRC Resident Inspector  
INPO Records Center

IE22

## LICENSEE EVENT REPORT (LER)

(See reverse for required number of  
digits/characters for each block)

Estimated burden per response to comply with this mandatory information collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to [infocollects@nrc.gov](mailto:infocollects@nrc.gov), and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. FACILITY NAME James A. FitzPatrick Nuclear Power Plant	2. DOCKET NUMBER 05000333	3. PAGE 1 OF 4
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4. TITLE  
Automatic Reactor Scram on Low Reactor Vessel Water Level During Reactor Feed Pump Control Reset

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
09	14	05	05	005	00	11	07	05	N/A	05000
									FACILITY NAME	DOCKET NUMBER
									N/A	05000

9. OPERATING MODE 1	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)									
	20.2201(b)		20.2203(a)(3)(ii)		50.73(a)(2)(ii)(B)		50.73(a)(2)(ix)(A)			
10. POWER LEVEL 100	20.2201(d)		20.2203(a)(4)		50.73(a)(2)(iii)		50.73(a)(2)(x)			
	20.2203(a)(1)		50.36(c)(1)(i)(A)		X 50.73(a)(2)(iv)(A)		73.71(a)(4)			
	20.2203(a)(2)(i)		50.36(c)(1)(ii)(A)		50.73(a)(2)(v)(A)		73.71(a)(5)			
	20.2203(a)(2)(ii)		50.36(c)(2)		50.73(a)(2)(v)(B)		OTHER Specify in Abstract below or in NRC Form 366A			
	20.2203(a)(2)(iii)		50.46(a)(3)(ii)		50.73(a)(2)(v)(C)					
	20.2203(a)(2)(iv)		50.73(a)(2)(i)(A)		50.73(a)(2)(v)(D)					
	20.2203(a)(2)(v)		50.73(a)(2)(i)(B)		50.73(a)(2)(vii)					
	20.2203(a)(2)(vi)		50.73(a)(2)(i)(C)		50.73(a)(2)(viii)(A)					
20.2203(a)(3)(i)		50.73(a)(2)(ii)(A)		50.73(a)(2)(viii)(B)						

12. LICENSEE CONTACT FOR THIS LER									
NAME Mr. Darren Deretz, Sr. Regulatory Compliance Specialist					TELEPHONE NUMBER (Include Area Code) (315) 349-6851				

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT									
CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX

14. SUPPLEMENTAL REPORT EXPECTED					15. EXPECTED SUBMISSION DATE		MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)					X	NO			

## 16. ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On September 14, 2005, at approximately 0213, with the plant operating at 100% power, an automatic reactor scram on low reactor water level occurred following a momentary loss of the Uninterruptible Power Supply (UPS) system. The power loss resulted in a lockout of the Reactor Feed Pump (RFP) controls, as designed. Following reset of the RFP controls, a level transient occurred causing reactor water level to lower, resulting in an automatic reactor scram on low reactor pressure vessel (RPV) water level (Level III). A Group 2 Primary Containment Isolation System (PCIS) isolation occurred, resulting in multiple system isolations. The Reactor Core Isolation Cooling system (RCIC) and the High Pressure Coolant Injection system (HPCI) auto initiated on "low-low" RPV water level (Level II). All systems operated as designed during and after the reactor scram.

The level transient was caused by a RFP controller low output signal which is a design characteristic of the controller following a momentary loss of power. The operator did not verify the output signal prior to resetting the RFP control, which would have identified the low signal. Contributing to this human error was an inadequate abnormal operating procedure. As part of the corrective actions, the applicable procedure has been revised and the requirement to verify the controller output signal prior to resetting has been reinforced.

There were no safety system functional failures or other safety consequences associated with this event.

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TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

EIIS Codes in [ ]

**PLANT STATUS**

The James A. FitzPatrick Nuclear Power Plant (JAF) was in Mode 1 (Run) at 100% power at the time of the automatic reactor scram. Just prior to the event, both Reactor Feed Pumps (RFPs) [SK] were operating at approximately 4000 revolutions per minute (RPM) and the plant was preparing for planned maintenance on the Uninterruptible Power Supply (UPS) motor generator set.

**BACKGROUND**

Feedwater [SJ] is delivered to the reactor pressure vessel (RPV) by two turbine driven RFPs. The two RFPs are single-stage, horizontal, centrifugal units using a steam driven turbine for motive power. The pumps operate in series with the condensate and condensate booster pumps to provide the required design flow and pressure at the reactor inlet nozzles.

The Feedwater Control System (FCS) [JB] controls the RFPs to automatically regulate feedwater flow into the RPV. The FCS is also capable of being manually regulated. Upon a loss of feedwater control signal, such as during a momentary loss of power, the control system voltage is removed from the RFP speed control gear, which locks the RFP speed at the speed level demanded just prior to the loss of control signal. The RFP speed can then be manually controlled or the control lockout can be reset to return the RFP speed control to automatic.

**EVENT DESCRIPTION**

On September 14, 2005, at approximately 0213, with the plant operating at 100% power, an automatic reactor scram on low RPV water level (Level III) occurred as a result of both RFPs decreasing in speed.

Just prior to this event, during preparations for planned maintenance on the UPS motor generator set, a momentary loss of the UPS system occurred while transferring UPS loads to the alternate power supply. The power loss resulted in a loss of feedwater control signal causing a lockout of the RFP controls, as designed. The appropriate Abnormal Operating Procedure (AOP) -21, "Loss of UPS", was entered. The AOP directs an operator to reset the "A" and "B" RFP loss of signal lockouts to restore automatic RPV water level control. A Senior Nuclear Operator (SNO) performed this action without verifying the associated output signals of the RFP controls. Due to the feedwater control output being low at the time of reset, both RFP's decreased in speed from approximately 4000 RPM to approximately 2500 RPM. This decrease in speed caused the RPV water level to decrease to <177" above Top of Active Fuel (TAF), the "low" level scram setpoint (Level III), causing the Reactor Protection System (RPS) to initiate an automatic reactor scram.

AOP-1, "Reactor Scram", and the associated Emergency Operating Procedure (EOP) -2, "RPV Control", were promptly entered and executed.

A Group 2 Primary Containment Isolation System (PCIS) [JM] isolation occurred due to RPV water level falling below Level III, resulting in multiple system isolations. The Reactor Core Isolation Cooling system (RCIC) [BN] and the High Pressure Coolant Injection system (HPCI) [BJ] auto initiated on "low-low" RPV water level (Level II, <126.5" above TAF), as designed. The HPCI system did not inject into the RPV due to the prompt recovery of RPV water level, which caused the HPCI injection valve to remain closed. The RCIC system started, aligned itself for injection, and injected into the RPV. Both HPCI and RCIC initiated and tripped appropriately based upon changing reactor water level conditions. The response of both systems was as expected.

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**EVENT DESCRIPTION (continued)**

All systems responded as designed during and after the reactor scram. All control rods fully inserted. The post transient evaluation determined that appropriate operator response was demonstrated during scram recovery activities. There were no nuclear, radiological or personnel safety issues associated with this event.

**BASIS FOR REPORT**

This event is reportable under 10CFR50.73(a)(2)(iv)(A) based on the automatic actuation of RPS, PCIS, HPCI and RCIC.

**CAUSE OF EVENT**

The cause of the reactor scram was low RPV water level resulting from an unanticipated reduction in RFP speed. This reduction in RFP speed was the result of a RFP control low output signal at the time the control lockout was reset. A proper verification of the control output signal would have identified this control low output prior to resetting the control lockout. This verification is a station expectation and is reinforced during operator training, but was not performed by the responsible SNO. [Cause Code A]

Insufficient guidance in the associated AOP contributed to this event. The applicable AOP (AOP-21) was reviewed during the pre-job brief. However, the AOP did not require the operator to observe the control outputs prior to returning the system to automatic operation and required the feedwater system lockouts to be reset promptly. This resulted in the SNO focusing on the action of promptly resetting the control lockouts instead of first verifying RFP control output.

**EVENT ANALYSIS**

The plant responded as designed following the automatic reactor scram. There were no challenges to the reactor coolant pressure boundary or the fuel cladding integrity. This event and the transient response is bounded by previous analyses contained in the Final Safety Analysis Report (FSAR), including various generation load reject transients, turbine trip transients, and reactor isolation transients. Therefore, the safety significance of this event was low and there were no nuclear, radiological or personnel safety issues associated with this event.

**CORRECTIVE ACTIONS***Corrective Actions Completed Prior to this Report:*

1. Revised the applicable AOP (AOP-21) to eliminate the requirement for promptly resetting the RFP control lockouts subsequent to a momentary loss of UPS.

*Corrective Actions not yet Completed:*

1. Conduct operator training on the event and on the RFP controller response.  
(Due 12/15/2005)
2. Perform extent of condition assessment for operator errors involving self checking during equipment manipulation.  
(Due 11/15/2005)

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**SAFETY SYSTEM FUNCTIONAL FAILURE REVIEW**

A review of this event determined that no safety system functional failure occurred.

**SIMILAR EVENTS**

No other similar issues were identified in previous plant LERs.

**FAILED COMPONENT IDENTIFICATION**

There were no component failures that directly caused this event.

**REFERENCES**

1. Root Cause Analysis Report, JAF Condition Report CR-JAF-2005-03818, Automatic Reactor Scram on Low Reactor Vessel Water Level, dated October 12, 2005.